

## ABSTRACT

A grating-based MUX/DMUX reduces temporal distortion. In one embodiment, an optical device that has a multi-channel port and a plurality of single-channel ports. At least one of the multi-channel port and the single-channel ports include a waveguide with a cross-sectional dimension that is smaller at an internal portion of the waveguide than at an aperture of the waveguide. An optical system has wavelength-dependent, free-space paths that couple light between the single-channel ports and the multi-channel ports. The waveguide aperture is coupled to one of the wavelength-dependent, free-space paths.

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